Abstract Submitted
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New Near-Deterministic Teleportation Protocol with Linear Optics MLADEN PAVICIC, University of Zagreb — We present a new near-deterministic method of separating all four photon Bell states by means of concatenated Mach-Zehnder interferometers. Realistic proposals for implementations of teleportation, superdense coding, and cryptographic ping-pong protocols will be presented. Discrimination of the Bell states is made possible by two two linear chains of concatenated Mach-Zehnder interferometers each fed with photons emerging from two opposite sides of a beam splitter. This amounts to detecting two Bell states $|\Phi^\pm\rangle$ while keeping the third one $|\Psi^+\rangle$ conditionally at bay—thus going around Vaidman-Lütkenhaus 50%-limit. Realistic implementation with an efficiency of 90% is feasible with today's technology. Channel capacity of 1.98 can be ideally achieved for superdense coding with 5 concatenated Mach-Zehnder interferometers but already with only two easily implementable ones we obtain 1.74 capacity. The setup is based on a revised and corrected method given in M. Pavičić, *Phys. Rev Lett.* **107**, 080403 (2011).

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